CS-382 Network Centric Computing: Spring 2017

Programming Assignment 1

Due Date: Sunday 15th February 2017 at 11:55 pm – max 50% credit for late submission

Important Note:

You can do this assignment in pairs. You can either write code in python or java. If there are questions ask the course staff; they are there to help you. Other than your partner you are not allowed to discuss your code with anyone.

Students are strongly advised that any act of plagiarism will be reported to the Disciplinary Committee.
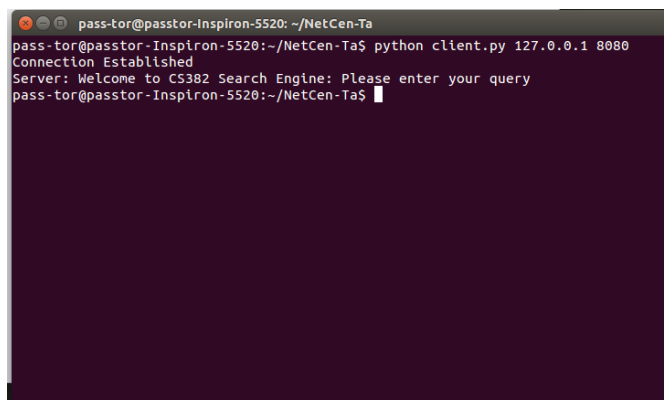
Problem:

You will use Linux environment for this assignment. The assignment consists of three parts based on simple socket programming and text matching. Sample test data is provided. In this assignment you are required to implement a simple search engine. This basically means that whatever a particular client types in the search engine he should receive all the relevant files. You must compare the input string with the name of the file as well as what is written inside the file for a match.

Part 1 (30 marks):

You must write a file name client.py <IP> <Port>or client.java <IP> <Port> which should connect with another file server.py <Port> or server.java <Port>.
Command for server: server.java

When the connection is established, the server must ask for a search query with a message similar to:

After client types in a search query and sends it to the server, the server must reply with the results.

When a client sends an input string to the search engine, it should look up in all the folders (including sub-folders) and compare the string with the name of the file(e.g., of .txt or .mp4 file) and also what is inside the file (e.g., in the case of .txt file). The server should reply with all the filenames and text where matching occurs. Please note: you cannot use any file system or search commands such as grep.

Sample Search on "Manchester" Returned with these results.

Part 2 (40 marks):
After search results have been displayed to the client, the client can now initiate a new search or request to download the file from the server. The file should be downloaded to the client's current directory. The client must maintain TCP connection until it sends an exit request or terminates unexpectedly. You are supposed to handle all disconnections (intentional or unintentional) appropriately.

Part 3 (30 marks):
Any number of users could connect to the search engine at the same time (Multi-threading is required).

What do you need to learn (on your own / through the tutorial)?
Socket programming interface in Java or Python (whichever you like).
Client-server programming in Python or Java.
Multi-threading in Python or Java.
Python Networking Guide: http://faculty.salina.k-state.edu/tim/NPstudy_guide/index.html

Java Networking Book:
http://stories20.com/allphoto/pdf/admin/An%20Introduction%20to%20Network%20Programming%20with%20Java%20Java%207%20Compatible%20.pdf

Submission Instructions:

- You must use Linux environment when developing your code
- Make a .txt file describing your implementation, imp.txt. Include contribution by each member in this file.
- Include all support files e.g., MakeFiles required to run your code
- Make a zip file based on your role number e.g., 17100206.zip
- Upload to LMS(Assignment Tab)